241 /142 cont./
Although one cannot /143/ calculate it, beyond doubt an enormous increase of density characterizes, in relation to the plains economy, that of the mountains.

A concentration of work and of life, the will marking everything, a deliberate agronomy, sharpening the ancestral practices by a reasoning capable of evaluating the action of factors and causes -- such aspects are frequent and decisive. But they are [184] not observed uniformly in all the cantons. If the hydraulics furnishes a criterion convenient for classifying these small societies, other factors compete there which are not found everywhere in the same degree. Their ideal union would make this montagnard 182 an economic being perfectly adapted to his milieu, who would 241 squeeze from it, by livestock breeding and tillage, the tree and the garden, every resource possible. But there is nothing of that. Adaptation of the group to its natural milieu, realization of equilibria, employing an economy propitious to a great history, which other aptitudes of these societies would postulate: all that has remained at a low, precarious level, or rather has consolidated in the regression. Why?

Creation of Soils, Collection of Water

● 242 The basic work in the mountains is the preservation and even 312 the creation of soils. It is mixed with another essential task, that 128 of the regularization of the water. Let us therefore examine simultaneously these two activities, which the native agronomy does not distinguish.

171 In a completely different milieu, that of the pre-Saharan plateaus, a peristyle bordering on the S. this Mediterranean world that Romania energetically made advance into Africa, such techniques have been remarkably described (1).

1. J. Baradez, Fossatum Africae, 1949, pp. 174 sq.

/161 cont./

241 mt'ra-s are brought about, whose explanation is absolutely not perceived by the peasant.

The requirements of the circulation of water, this whole art of planes, declivities, furrows, develop the agricultural modes for the irrigated. For the dry, on the contrary, they are limited, as everywhere in the rest of Morocco, to a scratching for burying in the ground, well adapted moreover to the nature of many of these fields. Nevertheless, one practices the loosening of the (171) compost by dressing, ttkerbil or ttneqqich, around the olive trees, but without using a special tool, as is done in Tunisia and even in the Aurés.

242 The imperfection of the system is manifested in particular by the rusticity /162/ of the rotation of crops (1).

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1. Let us compare it, for example, with Roussillon, M. Sorre, Pyrénées méditerranéennes, 1913, p. 304; with Andorra, Brutails, Étude sur la condition des populations rurales du Roussillon au Moyen Age /Study on the condition of the rural populations of Roussillon in the Middle Ages/, 1891, pp. 5 sq.; the Valencian huerta /irrigated region/ and the instructive rose of cultivations figured by Brunhes, op. laud., pp. 56, 65, 66; J. Caro Baroja, Pueblos de España /Pueblos of Spain/, Barcelona, 1946, pp. 401, 423 sq. (interesting bibliography on irrigation).

242 Even the name of what might correspond to it among the advanced agriculturalists of the Gharb or of the Doukkala, the bernieha, is known by only a small minority. It is to be noted, however, that a piedmont amghar cites in this regard, but in Arabic, a disabused axiom: lberninch ih'iyyed t'innich, t'innich ma idir lberninch, "rotation would eliminate poverty: but poverty is incapable of putting it to work." The lack of available

/162 cont./

242 space excludes fallow land in the irrigated. But it is practiced in the dry, in a system of ample and loose rotation, being combined with clearing and burning. Adage: ad assiki ij'j'i, "fallow land" /Fr. jachère/, or rather, "untilled land /Fr. friche/ enriches."

Generally, two campaigns are combined in one. To the extent at least that water resources let one anticipate the success of a spring sowing, it is maize that follows barley on the same parcel. Or even the turnip, cultivated on a large scale. One can [171] only compare the mediocrity of this binary method with the crop rotations of five, six, or seven terms, where barley and maize are included with the green bean and tobacco, in similarly montagnard milieus, like the Mediterranean Pyrenees. One will see to what point the scale of crops is poor or has become impoverished in Seksawa. As for the blocking of two campaigns into one, it is supposed to proceed from the exiguity of available land. Far better, one draws from it glory, and system. Nothing is as good, one says, as "maize under sheaf," asengar n-ddu tadla, that is, that sown even before the removal of the loose sheaves. It is true that one thinks that fertilizer will mend everything. Two larger sectors, such as Agersili and a. Mh'nd, hardly practice a movement by biennial soles. But the problem is doubtless not reduced to that of usable space. In the approaches to the plain, at Bul^{c}wân, for example, there is similarly a superposition of maize on barley, without the excuse of the exiguity. The rotation practiced at Agersili and in a. Mh'nd, and only there, seems to respond to an ensemble of conditions, among them a character of plenitude and of integrity of the montagnard system, rather than to an agronomic conception.

241 However that may be, the exhaustion resulting from this exploitation without respite is combated by the fertilizer. Manure and water are the two /163/ great remedies, object of a passionate care, of an attention without relaxation, and of an administration without measure. One deems that will remedy all the misfortunes of the milieu, aggravated by the defects of the method. Universal 241 expedients. The fertilizing of the soil in Seksawa is a rational 441 practice, and the advantage that results from it evaluated in terms 237

/163 cont./

237 himself with ardor. Necessarily, they express inequalities of
241 means, for all do not have the same effective force of animals for stud or in the stable. Consequently they diversify this agri-
[554] culture. Much more than food or clothing, it is /164/ the fertilizing of the land that indicates the social hierarchies here.

242 A beginning of a science of fertilizers is appearing among
237 the better peasants. They are familiar with the "manure hole" or even collect vegetable waste and fecal matter in their agrur and make a sort of compost out of them, in a propitious humidity. They differentiate according to origin. The manure of ovines is the "warmest": its effect lasts for three or four years; that of bovines, they say, is "colder," is of value for only one campaign. Some, shaping with a pickax the solidified layers, which sometimes accumulate for several years, to form a carapace immensely appreciated and which is called afghyus, add them up in superimposed beds: between two layers of the manure of ovines are spread layers of the manure of bovines and Equidae. This flaky mass, this is already advanced agronomy. It is observed, among others, in a. Mh'nd.

But why must it be that, as in the matter of water, the contribution of the precious substance is compromised by the procedures of use? This society is only familiar with manure long exposed to the sun "in small piles," s-tgud'iyin, in quincunxes on the field, and which remains there indefinitely to await the rain.
241 This belief in the virtues of insolation curiously reappears at the
237 time of harvest. The "loose sheaves," imadaghen, stay in the fields for long weeks before being transported to the "threshing
[343] floor," anrar, plur. inraren. After which -- at least on the Dir -- the straw will be transported anew and ensilaged in small huts of dry stone, called aqerbus (1).

1. Tagud'it, "the small pile" of manure, is to be compared with the etymology given by G. S. Colin for aqerbus: Lat. acervus, "the pile." This parallelism in signification is not without interest.

/166 cont./

245 the humidity that it collects. Almost constantly, a "basin," [312] tanut, plur. tuna, is arranged at the foot of the olive trees: a concave angle, outlined by a little flow-trench, takes up the descent of the impluvium, where the séguia water is not led by gravity in turns.

But no choice of the varieties of almond trees: those that scale the middle slopes, and testify moreover to a /167/ meritorious hardiness, do not result from any selection. They are [433] bastards made up of dozens of origins. Their yield is normally tiny, even though occasionally the surprise of an abundant fruc- [426] tification bursts forth. The risk is enormous. It enters into the calculations of the moneylenders. Sale while green, called bay^{c} u-ssalam, at usurious rates, formerly drained the almond near Mogador at the same time that it supplied the rich man of the mountain with liquid money. Around the olive trees, the "suckers," ayyawn (plur. of ayyaw), are carefully safeguarded. They pass for a sign of vitality, just as an excess of foliage does: they are compared to the beard of a man. Native aesthetics opts not for the single and thick trunk, but for the thicket of shoots [242] which finally develops at each base. Of course, neither grafting nor pruning. The "oleander," tazemmurt, is left to its decorative role, and, for us, a Mediterranean reminder, for the oleolentiscetum of the botanists has almost completely disappeared; it exists only in rare patches in the region of Imintanout. Diseases and parasites ravage every planting. For everything, this rural society -- quite significant poverty -- has only one word, the bu-zegg^{w}agh, that is, "the red," and, of course, cannot help it. The harvesting is a brutal beating, which abolishes hopes for the following year. Whence a productivity generally biennial. As for the walnut trees, the stripping of the roots in the search for the sswak (cf. name of the walnut tree, tsswikt) and even premature felling ravage the plantations. The resources of the orchard are reduced to these three species. The rarity of the fig tree in particular is noticeable. And despite the altitude, no apple trees or cherry trees. Here and there, in the high mountains, some [251] peach or apricot trees. They give rise to a fairly expert canning industry, notably at Ikis.

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244 The ensemble appears nonetheless as a decline of a former state, which must have known a completely different variety. That is true not only of the fruit trees, but further and especially of what we call "vegetables." The valley of the a. Lh'sen, whose conservation and vitality are striking, keeps a whole gamut of these crops: eggplants, gourds, pepper, tomatoes. The present success [177] that the potato, recently introduced, finds there, as in Idma, is perhaps a sign that this variety is an authentic trait, merely better preserved there than elsewhere. A new phase of progress could bring it back. In any case there is a relationship between the crop variety and the vigor of the group. We perceive there, very much alive, a new trait of these correlations between space, techniques, and the social structure, the delicate firmness of which the populations of the Atlas make us understand.

244 Let us carry on the observation. Market gardening is not at
242 all amenable here to the perspective of gardens. It is a large-scale cultivation whose value in rotation, in the formula turnip on barley, would be efficient if it were not borne on too-restricted areas. The distinction, for each of these crops, between an early kind and a late kind also contributes an element of interest. The eggplant and the tomato give rise to cautious sowings in general near habitations. Flat flagstones or interlacings of pink laurel protect the delicateness of the young sprouts from the beak of the hens and the danger of frosts. Some crops, like that of the gourd, present, according to cantons, instructive diversities. /171/ In the high cantons, it creeps among the stalks of maize. In Idma, it adorns the banks separating the benches. Lower, it grows in special squares. Mint, alone of all the plants of the valley, including fruit trees, knows grafting. It is crossed with the
244 "origanum," flayo. One would not know how to carry away an optimistic conclusion from only such details: they are in fact only details, or curiosities. The important fact is that this agriculture has become poorer in gamut without perfecting itself. The use of wild or subspontaneous species is no more than residual. The reduction in the number of cultivated species does not express, as in Europe, a selection of types, but a decline. Monotony reaches

/175 cont./

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/footnote 1 continued/ accumulates Mediterranean traits at high altitudes, and frankly tropical traits lower. This dissociation of the plant milieu obviously implies a difficult and divided economy, and postulates the historical event.

Although the effort of the men has constantly conspired with the first of the two terms, the second is revealed perhaps by some of the traits that surprise the observer. As one sees, we are excluding, as even more hypothetical, the objections that the agronomy of the manuals might inspire. There is nothing more arbitrary -- or premature -- than to try to evaluate, in a milieu as little deciphered by modern experimentation, the yield of
243 such-and-such a practice. The so-striking paradox of these lands sown with barley or maize in irrigated tiers -- a cereal cultivation in flower pots -- is doubtlessly explained by history. It is a trait of geographical repression. And, besides, barley is the least demanding of the large-scale cereals, not only in module of water, but in the annual distribution of this module. Its choice, supposing it deliberate, would have nothing irrational in it. Barley
(242) has the shortest cycle, which agrees very well with the necessity, imposed by the lack of space, to force two campaigns into one on the same soil. Finally, the deficit in barley, that is, in "bread," is the fright that everyone tries to avert more or less, without ever
(182) succeeding completely. The love of cereals is thus not only alimentary foresight. It is also a social precaution, tool of equality.

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Unfortunately, the vulnerability of the native equilibrium is great (2).

2. The modern balance of a region like that of the French Alps is the combined resultant of a better opening to exchanges, hence elimination of the archaic primacy of cereals, of a reciprocal arrangement of agriculture and livestock

[Ait Mh'nd]

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312 n-dar uzerg, t. n-talat nnur (accessory, collects the streaming water).

312 423 The irrigation mechanism has been dealt with above. It only functions, or in other words the water roster, tiwaliwin, only goes into effect, at the time when the low-water level, at the beginning of the dry season, imposes regulation. Thus it is this physical factor that will impose recourse to the rhythm of distribution. Similarly, and within each portion, in case the module is insufficient to irrigate simultaneously the ensemble of those [241] having rights, there will be a drawing of lots among them. It is still this pure question of fact that will determine whether or not there is a possibility of cultivating on the stubble fields after the • 242 barley harvest and of laying out the market gardens. On the other hand, what does not depend on outside circumstances is the biennial crop rotation, by alternated soles (Fr. sole, expanse of arable land intended for a certain crop in the rotation/ of barley and maize, which we see here. This movement bears on only four quarters, which are, to tell the truth, the best irrigated ones and like the heart of the ground: Twuttyan, Taqddut, Tighermin, Amegdul. The figures given above indicate that the crop rotation functions over some 25 ha., that is, over half of the ensemble of the irrigated crops.

Comments on the Parceling

613 423 Over all the expanse of the irrigated ground, each ikhs is represented by several fields in each of the quarters. Without exception. Despite sales, female inheritances, pledges, usurpations, etc., this rule /189/ still stands out from the perusal of a parceling established in 1948 (Fig. 8)[1] and about which it is advisable to state that it is the work of a young agricultural engineer uninformed about the custom and consequently not suspect a priori. In the numerous cases of the rrahn-s, he evidently noted the possessory situation. One will also observe -- and this deformation is interesting -- that the four superadded ikhs-s were indicated as being mingled with those of the basic ikhs-s, which are in a way

1, [For figure 8, see pp. 261-262--Analyst]

[Agersili]

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634 619 613 This specialization by sectors seems to be a corollary of the amplification of the group. It is complementary to another rule ordering the equilibrium of the group on the space that it occupies, by the minute samplings. Thus it is that the Idma are divided into five branches. They themselves are divided into 33 ikhs-s, two of which now extinct. The average size of an ikhs [162] can thus be estimated at 13 houses, 15; 5 foyers, 67; 74 persons. Of these five branches, four are represented at Usikis, three at Ad'erd'ur. Two seem to be concentrated particularly in one village, for example, Tasselli or Ad'erd'ur. Among the ikhs-s themselves, two are represented in several villages. One, the Iseqqalen, is represented everywhere. It is evidently the dominant group.

A harmony, obeying simple laws of balanced representation, is thus recognized in the composition that prevails between the Idma and their country. But an even more refined harmony prevails in the distribution of the grounds. How, in the case of Agersili, the division of the ground into quarters is combined with that of the group into ikhs-s: this is what will stand out from the table on the following page. /See p. 269./

Comments on the Table

613 423 242 312 [126] This table with its figures was drawn up by myself, following numerous cross-checkings on the spot, one of which was made in August, 1950, in the presence of J. Dresch. It is confirmed in large part by another table, this one figurative, drawn up by a scholar from Ad'erd'ur. The native figure is based, no longer on the division by quarters, but on the service by ditches. As the quarter here has a technical definition, that is, of being served by one main sluice, the result comes out the same. Nevertheless a fluctuation in the number of parcels: 3,546 according to the first method, 3,670 according to the second one. A coefficient of incertitude of some 4% is negligible. Thus let us study the principal traits that flow from this ensemble of indices, calculable, one sees, with sufficient exactitude.

[Agersili]

/Left side of chart, from p. 192 of the original source./

Analysis of the Parceling of Agersili

Number of parcels belonging to each of the ikhs-s in each of the quarters below

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Names of the ikhs-s	1. Tabt-en.	2. Tasluft.	3. Tamsayt-en.	4. It'mayas.	5. Ddu y-Irt'.	6. Tisberin.	7. Talat n-Ufrert.	8. Talburt.	9. Amaluyt'ich.	10. Amalu ddu wgadir.	11. Ddu Turirt.	12. Targa wallmas.
Iseqqalen	88	41	152	132	110	66	44	11	73	61	46	16
a. Ilarzg	77		27	33	98	106	36	27	13	37	16	69
a. H'sayn		3		29	24	33			6	5	10	18
a. M'hand u Abdellah	12	2	20	13	75	55	43	21	3	19	5	18
a Ulila			24	10	41	7			10	19		13
a. Weh'qqi			15	8	12					14	16	
Totals	177	46	238	225	360	267	123	59	105	155	93	134
Crop Rotation												
The initials o (barley), n (turnip), m (maize), indicate the crop cultivated in each of these quarters during the campaigns:												
1948-49	m	m	m	?	o	o	m	m	m	m	o	m
1949-50	o	o	o+m	m	m	m	o+n	o	o	o+n	m	o
1950-51	m	m	m	o+m	o	o	m	m	m	m	o	m
1951-52	o	o	o+n	o+m	m	o+n	o+n	o+n	o+n	o+n	o+n	o+n
1952-53	m	m	m	m+o	o	m+o	o	m	m	m	m	m

[Agersili]

/Right side of chart, from p. 193 of the original source./

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13. Ines'ugiten.	14. Firsiten.	15. Ugrug i-yni y-iz'ma.	16. F-Ighuzi.	17. Anslu y-ini n-tasut.	18. Teleggui-en.	19. Dougord'en.	20. Awrz i-yni y-iz'ma.	21. Anslu y-ini y-iz'ma.	22. Tslat Ungher.	23. Wanammer-en.	24. Targa y-Irz.	25. Awrir-en.	26. Tslat n-Tfrawt.	27. Ait Yus.	
6	6	5		11	27	13	10	7		56	33	50	5	12	1,095
56	57	18	48	20	11	52	9	23	35	118	9	111	80	63	1,270
			15			3		7	26	10	30	30			213
43	35	21	11	13	3	23	7	2	11	15	3	91	20	13	637
31	1				13	12		9	2	9		29	13	13	256
															65
136	99	44	74	44	64	103	26	48	74	208	75	311	118	101	3,546
?	o	o	?	m	m	o	o	o	m	o	o	o	m	o	
o+n	o+n	m	m	o+n	o+n	m	m	n	o	m	m	o	o	m	
m	o	o	o	m	m	o	o	o	m	o+m	o	m	m		
o+n	m	m	o+n	o+n	m+n	m+n	m	o+n	o+n	m	o+n	o	o		
m	o	o	m	m	o	o	o	m	m	o	m	o	m		

[Agersili]

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242 241 [184] The second striking trait, and which has already been indicated, is that at Agersili, as in a. Mh'nd, and only there, the area is judged sufficient in order for a crop rotation dealing with barley and maize, but accessorily also with the turnip, to be practiced. On one of our tables we have entered indications gathered over a five-year cycle. That is not very long. But, cross-checked with the local tradition, very affirmative on this point of technique, this rotation may be considered as established. There comes out very clearly a two-part cadence, the classic Mediterranean rotation, with intercalation, if I may venture to say it, of a six-month fallowing: everywhere else, in effect, two campaigns, one of maize, the other of barley, are superposed in the same year. Besides the relative size of the available land, the delay on the cultivation of barley that the annual snowfall imposes at Agersili is perhaps responsible for this slackening of the agricultural rhythm. It seems, however, that there is nothing to that. Another mountain ground, in the Aziwal, practices late sowings (March). Elsewhere, on the contrary, at the same altitude, one sows at the usual time, that is, before the snow falls. That is notably the case for the a. Mh'nd.

242 233 Let us add that, in summer, the harvest of barley and the milking of the animals, which then feed plentifully on the stubble fields, provoke a general displacement: short in terms of the distance covered, but important because it concerns not only the herd but also the families. They establish themselves in the two villages of dry stone that we have observed. The disposition of the crops in continuous soles makes this grazing place possible. In return, the herd fertilizes the earth.

242 The system is thus well contrived. Its size helping, and also the privileged character that it draws from its belonging to the victorious village of Usikis, the most prestigious of the Idma villages, one can recognize in it a veritable classicism of montagnard agriculture.

[Ibuban]

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133 [137] dangerously close. To the N. and N.-E. it is still covered by a forest of holm oaks, junipers, and lentisks, where the villages have had to clear a place for themselves parsimoniously. To the S. the lands of Iwulla almost reach as far as the village of Tugg Lkheyr, hanging over it by the Awrir i-ysemgan, "the hill of the Negroes," with colossal populations of opuntia. To the E. the country is cut not only by the valley of the asif n.-a. Lh'sen, but by the high brows of the Amuddur (2,075 meters), through the Wanz'id' possessions which advance to the north like a duck's bill to rejoin the /208/ domain of the a. Lh'sen "of below" 233 423 613 (Awines and Buteghradin). The pasturage is so restricted, especially on the side of the Ameznir, that these schistose slopes are delimited among ikhs-s users. This notably at Tugg Lkheyr and Timskert, where this division of the sterile wasteland appears to have been pushed to its last degree and to have developed a whole red tape of documents of ownership.

166 Yet this mutilated sector represents a reordering, due to the intervention of the "caid" Lmokhtar, for whom one will note the topographical strategy, adroit at reserving for his what we call the lines of communication. Formerly, the a. Lh'sen of 166 432 Awines had occupied the Ibuban. The present inhabitants, of heteroclite and successive origins, settled by way of purchase. But the avarice of these driven-back populations enabled them to overflow it anew on the, not political, but juridical plane. They bought lands from their neighbors from Ammern and a. Musa, in the Ilikri.

312 [242] Nothing more precarious seemingly than this country without water. Barely two or three miserable sources, all just suitable to give drink to the villages and to support, at the price of a long-term rotation (12 days for three ikhs-s at Timskert, for example), a few poor patches of gourds and onions. The only resource is that of the streaming water. It nevertheless appears considerable in case of heavy rain. The reserves of the soil, long stored, then 241 liquefy. One has barley for four or five years. Or one waits for the storm, rrâda, which in general at the end of August marks the time of the musêm of Tamarut, in Demsira, to "carry off" a